

**Amendment to the claims:**

Please amend the claims as listed in the following listing of claims, which replaces all prior versions, and listings, of claims in the application:

**Listing of the Claims:**

Claims 1-17 (canceled).

18. (currently amended): A method of surface polishing of at least one principal surface of an optical article made from transparent thermoplastic material comprising the successive steps of:  
  
grinding;  
  
fine grinding; and  
  
polishing;  
  
wherein the fine grinding and/or the polishing comprises attacking the principal surface of the article with a solvent or a mixture of organic solvents and not with a non-solvent of the transparent thermoplastic material.
19. (previously presented): The method of claim 18, wherein polishing comprises attacking the principal surface of the article with a solvent or a mixture of organic solvents of the transparent thermoplastic material.
20. (previously presented): The method of claim 18, wherein the attacking comprises centrifugation of the solvent or mixture of solvents on the principal surface of the article.
21. (previously presented): The method of claim 20, wherein the attacking is further defined as comprising a radial disposition of the solvent or mixture of solvents on the principal surface.
22. (previously presented): The method of claim 21, wherein the radial deposition takes place from the center to the edge of the article.

23. (previously presented): The method of claim 18, wherein the attacking is performed by contacting the principal surface with a vapor of the solvent or mixture of solvents.
24. (previously presented): The method of claim 23, wherein the vapor is produced by heating the solvent or mixture of solvents.
25. (previously presented): The method of claim 24, wherein the solvent or mixture of solvents is heated to its boiling point.
26. (previously presented): The method of claim 25, wherein the optical article is heated to a temperature lower than the boiling point of the solvent or mixture of solvents.
27. (previously presented): The method of claim 23, wherein the contacting of the principal surface with the vapor of the solvent or mixture of solvents comprises saturation with the vapor of the solvent or mixture of solvents.
28. (previously presented): The method of claim 27, wherein the solvent vapor is at ambient temperature.
29. (previously presented): The method of claim 18, wherein attacking comprises both an attacking by centrifugation of the solvent or the mixture of organic solvents and an attacking with a vapor phase of the solvent or mixture of organic solvents.
30. (previously presented): The method of claim 29, wherein the attacking by centrifugation of the solvent or mixture of organic solvents occurs before the attacking with a vapor phase of the solvent or mixture of organic solvents.
31. (previously presented): The method of claim 29, wherein the attacking by centrifugation of the solvent or mixture of organic solvents follows the attacking with the vapor phase of the solvent or mixture of organic solvents.

32. (previously presented): The method of claim 18, wherein the solvent is selected from the group consisting of dichloromethane, the dichloroethanes, acetone, methyl ethyl ketone, trichloromethane, THF and dioxane.
33. (previously presented): The method of claim 18, wherein the transparent thermoplastic material is polycarbonate.
34. (previously presented): The method of claim 18, wherein the optical article is further defined as a spectacle lens.

**A Response to the Final Office Action Dated April 25, 2005:****A. Status of the Claims**

Claims 18-34 were pending at the time the Office Action dated April 25, 2005, was mailed to Applicants. Claim 18 has been amended. Support for the amendment can be found throughout the specification and claims as originally filed. No new matter has been added. Claims 18-34 are currently pending.

**B. The Negative Limitation "and not with a non-solvent" Is Supported by Applicants' Specification**

Claim 18 has been amended to include "and not with a non-solvent." It is well settled that "[i]f alternative elements are positively recited in the specification, they may be explicitly excluded in the claims." MPEP 2173.05(i) (citing *In re Johnson*, 558 F.2d 1008, 1019, (CCPA 1977)). The phrase "non-solvent" is positively recited in Applicants' specification. For example, the specification identifies an embodiment of a method of producing a smooth surface on a thermoplastic article which includes "immersing the article in a bath containing at least one solvent of the thermoplastic material and a non-solvent of the thermoplastic material." Specification at page 2, lines 20-21 (emphasis added). Therefore, present claim 18 satisfies all of the requirements of 35 U.S.C. § 112, first paragraph.

**C. The Obviousness Rejection Is Overcome****1. Summary of the Rejection**

The Action rejects claims 18-34 under 35 U.S.C. § 103(a) as being obvious over statements made in Applicants' specification at page 1, line 7, to page 2, line 11, in view of U.S. Patent No. 4,376,751 to Duchane. The Action contends that Applicants' specification "teaches that the instant successive steps of grinding, fine grinding and polishing are well known in the art

and are indeed applied to optical articles such as lenses.” The October 6, 2004, Office Action at page 2.

The Action then cites to Duchane and contends that it discloses the use of a mixture of a solvent and a non-solvent can be used for polishing a surface. From this, the Action concludes that “[t]he use of a solvent as a substitute for mechanical polishing is in fact taught in Duchane *et al.* (albeit, with a non-solvent to obtain “super-smooth” surfaces) to obtain smooth surfaces.” Present Action at page 3. It appears that the Action is contending that Duchane discloses the use of a solvent to obtain a smooth surface and the use of a solvent with a non-solvent to obtain a “super smooth” surface. If this interpretation is incorrect, Applicants request clarification.

**2. A *Prima Facie* Case of Obviousness Has Not Been Established**

**a. The cited art fails to teach every element of the claimed invention**

A necessary element to establish a *prima facie* case of obviousness mandates a showing by the Action that every element of the claimed invention is disclosed by the cited art. *Manual of Patent Examining Procedure* (MPEP) § 2142 (8th Ed. Inc. Rev. No. 2). This has not been done.

The cited art fails to disclose Applicants’ claimed element of “...attacking the principal surface of the article with a solvent or a mixture of organic solvents **and not with a non-solvent** of the transparent thermoplastic material.” Claim 18 (emphasis added). For example, the Action concedes in the Office Action dated October 6, 2004, that “the admitted prior art fails to teach that the final mechanical steps of the grinding...would be replaced with an attack of the principal surface of the article with a solvent or mixture of solvents.” October Action at page 2.

As for the Duchane reference, it appears to concern the production of super smooth articles that are made of thermoplastic materials. Duchane, Abstract. The collaborators in

Duchane, however, observe that the use of a non-solvent is “**necessary**” to achieve a smooth surface:

From the results in Example 1 and Example 3 (below), it appears that a nonsolvent is necessary to achieve a super-smooth surface. The nonsolvent allows the controlled extraction of the solvent from the substrate.

*Id.* at col. 8, lines 17-21. This is opposite to Applicants’ claimed invention which is directed towards “[a] **method of surface polishing**...comprising...attacking the principal surface of the article with a solvent or a mixture of organic solvents **and not with a non-solvent.**”

In fact, the data in Duchane appears to show that the use of a solvent **without** a non-solvent fails to create a polished surface. For instance, the collaborators in Duchane use acetone as a solvent on an acrylic rod to obtain a smooth surface. A non-solvent was **not** used in this particular experiment. Instead of obtaining a smooth surface, the surface of the acrylic rod had “ripples, rounded pits, and lumps”:

An acrylic rod was immersed in pure acetone for 5 minutes, then removed, and allowed to dry. Immediately after removal from the acetone, the surface of the rod appeared to be smooth. However, the surface became microscopically undulating as the acetone evaporated. Microscopic examination at about 20–40× showed that surface scratches had been eliminated but that transverse ripples, rounded pits, and lumps were now present.

*Id.* at col. 8, lines 8-16. Contrary to the Action’s apparent position, the collaborators in Duchane described this surface as have a “wrinkled appearance”—not a smooth or polished surface. *Id.* at col. 2, lines 16-19.

Because Duchane appears to disclose that the use of a solvent with a non-solvent is “**necessary**” to obtain a polished surface, and that the use of a solvent alone (*i.e.*, without a non-solvent creates a “wrinkled appearance” that has “ripples, rounded pits, and lumps,” this

reference fails to disclose Applicants' claimed element of polishing a surface comprising using "a solvent or a mixture of organic solvents and not with a non-solvent." Therefore, a necessary element to establish a *prima facie* case of obviousness has not been established and the present obviousness rejection should be withdrawn.

***b. There is no motivation to modify or combine the teachings of Duchane***

A second element necessary to establish a *prima facie* case of obviousness requires a showing by the Action that there is a motivation to modify or combine the teachings of Duchane with a mechanical step (e.g., grinding) to polish a surface. MPEP § 2142. This has not been done.

In fact, the Action appears to ignore the motivation to combine or modify requirement altogether by incorrectly noting that "[o]bviousness only requires a reasonable expectation of success and such has been shown." The Action at page 3. Additionally, the Action admits that "applicant's specification is not being relied upon for any motivation to combine." *Id.* Further, the Action fails to present any evidence of an existence of a motivation to combine or modify the cited art.

***i. There is no motivation to modify Duchane to exclude the use of a non-solvent to polish a surface***

As noted above, Duchane fails to disclose Applicants' claimed method of surface polishing comprising "attacking the principal surface of the article with a solvent or a mixture of organic solvents and not with a non-solvent." There is no motivation to modify Duchane to use a solvent alone (*i.e.*, without a non-solvent) to obtain a polished surface. Duchane discloses that the use of a solvent **without** a non-solvent produces a surface that has a "wrinkled appearance" with "ripples, rounded pits, and lumps." Stated another way, Duchane appears to indicate that if a non-solvent is used in combination with a solvent, a polished surface is obtained, but that if a

solvent is used without a non-solvent, an undulating and “wrinkled” surface is obtained. This is strong evidence that modifying the teachings of Duchane to exclude the use of a non-solvent for polishing does not work. Therefore, there is no motivation to modify Duchane. *See* MPEP § 2143.01 (noting that “[i]f the proposed modification would render the prior art invention being modified unsatisfactory for its intended purposed, then there is no suggestion or motivation to make the proposed modification.”).

ii. *Duchane teaches away from using a solvent without a non-solvent to polish a surface*

The fact that Duchane notes that the exclusion of a non-solvent produces a surface that has “ripples, rounded pits, and lumps” is evidence that it teaches away from Applicants’ claimed process. *See In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (noting that “[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.”). For example, a person of ordinary skill in the art, upon reading Duchane, would be discouraged from polishing a surface with a solvent and not with a non-solvent because one would expect to obtain a surface that has a “wrinkled appearance.” If anything, the person of skill in the art would be led in a direction of using a solvent in combination with a non-solvent to obtain a polished surface. The fact that Duchane teaches away from excluding the use of a non-solvent for polishing is strong evidence of non-obviousness. MPEP § 2145 (“A prior art reference that ‘teaches away’ from the claimed invention is a significant factor to be considered in determining obviousness...”).



iii. *There is no motivation to combine Duchane with Applicants' "admitted art"*

There is no motivation to combine the grinding step disclosed in Applicants' specification with the solvent/non-solvent combination polishing step in Duchane. In fact, the Action admits that "applicant's specification is not being relied upon for any motivation to combine." Additionally, Duchane appears to teach away from using its disclosed solvent/non-solvent step along with a mechanical grinding step.

For example, in discussing a mechanical process (*i.e.*, "diamond knife" grinding) that can be used to polish an article, Duchane points out the inefficiencies and difficulties in using the process. Duchane even notes that it is difficult to produce a super-smooth surface by mechanical means:

Furthermore, it is difficult to produce super-smooth surface finishes on polymers by mechanical means because heat produced by frictional processes is dissipated much more slowly by plastics than by metals or glass, and the lower softening points of these materials often result in gumming and poor finish control, as disclosed in *Modern Plastics Encyclopedia*, pp. 533-536, S. Gross, Editor-in-Chief (McGraw-Hill, NY, 1974).

Duchane at col. 1, lines 41-52. In fact, Duchane actually compares the grinding process and solvent/nonsolvent combination process without suggesting that the two processes could or should be combined:

In an especially preferred embodiment, the thermoplastic material is acrylic (*i.e.*, poly(methyl methacrylate)), the solvent is acetone, and the nonsolvent is a particular mixture of water and a polyethylene glycol having a particular molecular weight. Using this combination, extremely smooth rounded or formed surfaces were obtained which had very few imperfections and no visible machining marks when viewed at a magnification of up to 1600 $\times$  (unlike the smoothest prior art rounded or formed surfaces of thermoplastic material, which were obtained by diamond knife machining).

*Id.* at col. 3, lines 42-52 (emphasis added). This is strong evidence of a lack of motivation to combine the teachings of Duchane with Applicants' "admitted art." MPEP § 2143.01 ("[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.").

Further, the Action's position that "Duchane et al is merely being relied upon to teach the obviousness of replacing a mechanical polishing with a solvent -induced polishing" misses the point for establishing a *prima facie* case of obviousness: there must be a motivation to combine Duchane with the other art cited by the Action. As noted above, there is simply no suggestion of the "desirability of the combination" of the teachings in Duchane with the other cited art, and the Action has presented no evidence to the contrary.

Because there is no apparent motivation to combine the cited art, an element necessary to establish a *prima facie* case of obviousness is missing. Therefore the present obviousness rejection cannot be maintained and should be withdrawn.

***c. There is no reasonable expectation of success that modifying Duchane to include Applicants' claimed invention would work***

A third element necessary to establish a *prima facie* case of obviousness requires a showing of a reasonable expectation of success that modifying the teachings of Duchane to attack "the principal surface of the article with a solvent or a mixture of organic solvents and not with a non-solvent" or to combine such a step with a "grinding" step would work. This has not been done.

As noted above, Duchane notes that the exclusion of a non-solvent produces a surface that has "ripples, rounded pits, and lumps." This is evidence that a person of ordinary skill in the art would not have a reasonable expectation of success in using Applicants' claimed invention. Rather, one would expect to obtain a surface that has a "wrinkled appearance." Further,

Duchane notes that the use of a mechanical process “is difficult to produce super-smooth surface finishes.” It appears therefore that a person of ordinary skill in the art, upon reading Duchane, would expect to encounter difficulties in using a mechanical means to polish an article.

In summary, Duchane appears to indicate that the use of a solvent without a non-solvent produces a surface that has “ripples, rounded pits, and lumps” and that mechanical polishing means have inherent difficulties that limit the effectiveness of their polishing capabilities. If a person of ordinary skill in the art were to combine these two processes, one would expect to obtain an undulating surface that has a “wrinkled appearance.” Based on the teachings of Duchane, there appears to be little if any expectation of obtaining a polished surface—much less a reasonable expectation of success.

Because the Action fails to show all of the elements necessary to establish a *prima facie* case of obviousness, the present rejection cannot be maintained. Applicants request that this rejection be withdrawn.

***d. Use of Applicants' disclosure to support the present obviousness rejection is impermissible hindsight***

It is improper to use Applicants' disclosure to support the present obviousness rejection. See MPEP § 2142. It is well known that “[k]nowledge of applicant's disclosure must be put aside in reaching this determination...impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.” *Id.* There does not appear to be any teachings in Duchane of the desirability to combine a grinding step with a solvent/non solvent combination step to obtain a polished surface. See above. Use of Applicants' specification to find such a motivation is improper. See MPEP § 2142.

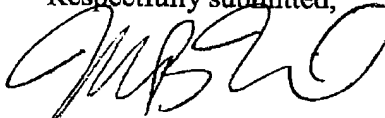
**D. Conclusion**

Applicants believe that the present document is a full and complete response to the Final Office Action dated April 25, 2005. The present case is in condition for allowance, and such favorable action is respectfully requested.

It is believed that no fees are due with the filing of this Response. However, should any fees be due under 37 C.F.R. §§ 1.16 to 1.21, the Commissioner is authorized to deduct any fees from or to Fulbright & Jaworski Deposit Account No. 50-1212/ESSR:062US.

The Examiner is invited to contact the undersigned Attorney at (512) 536-3035 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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